EXHIBIT F

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

HUNTAIR, INC.	)	
Plaintiff,	)	Case No. 07 C 6890
vs.	)	Hon. Judge Coar
CLIMATECRAFT, INC.	)	Magistrate Judge Denlow
Defendant.	)	

AFFIDAVIT REGARDING FAN ARRAY CLAIM CONSTRUCTION

STATE OF ILLINOIS)
) SS:
COUNTY OF DUPAGE)

I, Albert V. Karvelis, hereby state under oath as follows:

1. I have been asked by counsel for Huntair, Inc. ("Huntair") to analyze claim construction issues related to terms from the Claims of U.S. Patent Nos. 7,179,046 and 7,137,775 ("'046 Patent" and "'775 Patent"). This report sets forth my opinions and bases for those opinions concerning claim construction. I expect that I will offer additional opinions in this matter according to the timetable set for expert discovery by Judge Coar. The opinions I set forth herein are my own and are based on my research in this matter and the education, experience, training and skill I have accumulated in the course of my 40 year career in engineering. Between now and such a time that I may be asked to testify, I expect to continue my review, evaluation and analysis of information generated during discovery, as well as of relevant evidence presented at trial.

QUALIFICATIONS

2. I, Albert V. Karvelis, Ph.D., P.E., am a licensed Professional Engineer in Illinois, Texas, Connecticut, Michigan, Wisconsin and Florida with over 40 years of engineering experience. I am currently employed by Packer Engineering, Inc. ("Packer") in Naperville, Illinois, as Senior Vice President. I joined Packer in 1989. Packer is a multidisciplinary engineering and scientific consulting and technical services company. My responsibilities with Packer include mechanical engineering consulting and testing with respect to machinery design and performance, manufacturing processes, and failure analysis in addition to various management duties.

3. I am an active member of the American Society of Mechanical Engineers in the Design Engineering Division and the Codes & Standards Division for over 25 years. A copy of my *curriculum vitae* is attached as Appendix A. A list of cases in which I have testified at deposition or trial during the last four years is attached as Appendix B.

4. In 1966, I received my bachelor's degree in Aerospace Engineering from the University of Michigan. In 1967, I received my master's degree in Engineering, also from the University of Michigan. I accepted a faculty position in the Mechanical Engineering Department at the Pennsylvania State University. In 1975, I received my doctorate in Engineering Acoustics from the Pennsylvania State University.

5. From May 1975 to January 1989, I was employed by the Trane Company, Babcock & Wilcox and Borg Warner as engineer and manager. I am familiar with mechanical design and patent matters as a result of my activities at the University of Michigan Institute of Science & Technology, U.S. Navy, Trane, Babcock & Wilcox, Borg Warner and Packer Engineering. I was originally trained in patent analysis while serving on active duty in the U.S. Navy with the Office of Naval Research.

6. The subject technology of the patents-in-suit is HVAC equipment design and performance. The specific HVAC equipment that is the subject of the asserted patents is: air handling systems or "air handlers." I have significant engineering experience with Heating Ventilating and Air Conditioning (HVAC) equipment design and performance. The experience includes component design and test for Trane Company and York International, the two of the three leading HVAC manufacturers in the USA. I have also conducted failure analysis of hospital, hotel and dormitory and tunnel air handling equipment while at Packer Engineering. I am a person of at least ordinary skill in the art.

7. In the course of my research, I have studied the patents-in-suit, portions of their prosecution history, Plaintiff's Preliminary Infringement Contentions disclosure, and Websters Third New International Dictionary of the English Language, Unabridged (2002).

8. I am a salaried employee of Packer Engineering. Packer Engineering charges an hourly rate of $350 for my time, plus reasonable expenses.

CLAIM CONSTRUCTION

9. I reviewed the asserted claims of the '046 and '775 Patents. I find that the claim terms are readily understood by a person of ordinary skill in the art of designing air handling systems for conditioning the air of structures. I have reviewed the claim construction positions offered by ClimateCraft, and find that they have incorporated many extraneous limitations into the claims.

10. The term "fan array" in the context of the '046 and '775 Patents means a "plurality of fan units arranged in a grid, a spaced pattern, a checkerboard, rows slightly offset, or a staggered array configuration."

11. The term "air handling compartment" means "the inlet plenum, fan section and discharge plenum." The patent terminology is consistent with the ordinary and customary usage

of the term "air handling compartment." I will also provide definition of the term "plenum" as used in the art, if requested.

12. The term "a control system for operating said plurality of fan units at substantially peak efficiency by strategically turning on and off selective ones of said plurality of fan units" means: "operating the fan units at nearly peak efficiency by strategically turning on and off selective ones of the fan units by using a manual or automatic control."

13. The term "a control system for operating said plurality of fan units, said control system allowing control of the speed of the fan units in said plurality of fan units such that they run at substantially peak efficiency" means: "operating the fan units at speeds achieving nearly peak efficiency by using a manual or automatic control."

14. In my opinion, a person of ordinary skill in the art would readily understand that there are at least two strategies for "turning on and off" individual fans driven by electric motors as practiced in the HVAC art: manual operation and automatic/programmable controllers. Claims depending from the independent claim specifically limit the dependent claim to the programmable controllers. Similarly, the speed of individual fans, singly or collectively, may also be set either manually or automatic/programmable means. In my opinion, a person of ordinary skill in the art would understand that the claim term "control system for..." is meant to be broad and to include manual as well as automatic/programmable control strategies in the context of the asserted patents.

15. I have also reviewed the position submitted by ClimateCraft. The ClimateCraft definition requires, among other things, automatically determining if fans should be turned off, and automatically turning off fans. ClimateCraft consistently inserts the term "automatic" in all their proposed claim constructions for "control system" which sets either speed or on/off state. There is no such limiting requirement in the claims of the '046 Patent that refer to a "control system." There are claims in the patent which are directed to a preferred embodiment where the fan array is under automatic control (see the discussion regarding the programmable array controller below), but the "control system" contains no such limitation or requirement. Accepting ClimateCraft's position results in no substantial difference between an "array controller" and a "control system" as the terms are used in the patents.

16. My understanding is supported by the patents themselves. The specification states that "[f]or example, in the 5x5 fan array such as that shown in FIGS. 5, 13, and 14, **a person** desiring to control the array may select desired air volume, a level of air flow, a pattern of air flow, and/or **how many fans to operate**." ('046 Patent, Col. 7, ll, 4-7). The specification also states that "[a] control system (that may include the array controller 300) would be used to take fan units 200 on line (an "ON" fan unit 200) and offline (an "OFF" fan unit 200) individually."

17. ClimateCraft defines "peak efficiency" as the term is used in the patents to refer to the "maximum achievable static efficiency for a fan unit..." This is not a definition that is consistent with the art, in my opinion. First of all, reference to the 2008 ASHRAE Handbook provides support for the mechanical efficiency as being the more appropriate choice for general fan efficiency and not static efficiency. Second, the ClimateCraft definition implicitly ignores

the fact that the mechanical efficiency of a given fan design can be different at different speeds and therefore their construction would therefore make the preferred embodiment specification internally inconsistent. Third, the ASHRAE Handbook makes clear that "the optimum selection range or peak efficiency point is identified in various ways by different manufacturers." The term "maximum achievable static efficiency" operating point for a fan unit is not a term that is recognizable in the art.

18. The ASHRAE Handbook and the '046 specification both discuss in some detail, the issue of surge/instability induced by the use of two fans. The ClimateCraft definition applied to the claims would preclude the adoption of the industry practice of adapting to system and surge effects in the fan array claimed inventions. A person of ordinary skill in the art would understand that that is one more reason for finding the ClimateCraft definition unreasonable and unlikely to be adopted. For at least these above stated reasons, I find the ClimateCraft definitions incorrect.

19. In my opinion, a person of ordinary skill in the art would understand the term "peak efficiency" to mean the "optimizing the ratio of power delivered by the fans to the electrical power consumed by the fans."

20. ClimateCraft further proposed a construction of the term "a control system for controlling the speed ... peak efficiency" by incorporating requirements that describe the use of automatic determination of which fans speeds should be increased and which should be decreased. Their construction is completely unjustified because it incorporates a specific and detailed control strategy that is not found in the original claim term.

21. Furthermore, the asserted patents refer to efficiency of the "fan units" each of which is defined as at least the "inlet cone, a fan, and a motor." (Col. 1, ll. 46-47). The "strategically turning on and off" control claim term does not require that each individual fan unit run at peak static efficiency as proposed by ClimateCraft. A person of ordinary skill in the art, in my opinion, would understand that "strategically turning on and off selective ones [fan units]" cannot result in the "static efficiency" of each of the remaining running fans becoming optimized simply because one or more individual units were turned off or on, as would be required by the proposed by ClimateCraft construction.

22. This further supports my understanding that the efficiency as used in the patents refers to mechanical power efficiency ("[u]sing a control system to take fan units on line and off line allows a user to control **power usage** and/or air flow").

23. I understand that ClimateCraft may offer an expert witness in support of its claim construction positions. I reserve the right to provide further opinions based on my review of his or her report. If asked, I will prepare and present an overview, to the Court, of the HVAC technology relevant to the determination of proper construction of the disputed claim terms.

FURTHER AFFIANT SAYETH NOT.

Executed on July 3, 2008.

Albert V. Karvelis

STATE OF ILLINOIS

COUNTY OF DUPAGE

Signed and sworn to before me on this 3rd day of July, 2008 by Albert V. Karvelis.

Notary's Seal

"OFFICIAL SEAL"
Amy E. Baehr
Notary Public, State of Illinois
My Commission Exp. 08/01/2010

Notary Public
My Commission expires: